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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/933,461	08/20/2001	Richard Alan Haight	YO919980510US2	7338

7590 11/02/2007

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EXAMINER	
EVANS, GEOFFREY S	

ART UNIT	PAPER NUMBER
1793	

MAIL DATE	DELIVERY MODE
11/02/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/933,461	Applicant(s) HAIGHT ET AL.	
	Examiner Geoffrey S. Evans	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 July 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *101-184* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *101-184* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This application has been reassigned to primary examiner Geoffrey S. Evans in art unit 1793.

2. Since the case is no longer considered in condition for allowance due to newly discovered prior art, determining whether to establish an interference with 09/775,069 would currently be inappropriate.

3. Claims 101-106,108-123, 132/101,132/102,132/105, 133,134,135,145/135, 156,157,166,167,176 , and 178 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification of the instant application only gives examples of laser ablation of chromium (page 7 of specification), gold (page 12 of specification), silver film on glass (page 13 of specification), SiO_2 (glass) (page 15 of specification), cornea (page 16 of specification). There is no disclosure of the material genus being "non-biological" as claimed in claims 101-106,108 –123, 132/101,132/102,132/105, of the material genus being "non-organic" as claimed in claims 133, 134,156,166,176, of the material genus being "non-organic" as claimed in claims 135,145/135,157,167, and 178. Applicant cannot successfully argue that Applicant by having examples of the genus is entitled to claim the entire genus.

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 151-153 are rejected under 35 U.S.C. 102(b) as being anticipated by Mourou in U.S. Patent No. 5,656,186. Mourou directs the laser pulses at a point at or beneath the surface of the material.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 101-150, and 154-184 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mourou et al. in U.S. Patent No. 5,656,186 in view of Portney et al. in U.S. Patent No. 5,053,171 or Bennin et al. in U.S. Patent No. 5,160,823. Mourou et al. discloses a method for laser induced breakdown of a non-biological material (e.g. gold

and glass), the material being characterized by a relationship of fluence breakdown at which breakdown occurs versus laser pulse width that exhibits a distinct change of slope at a characteristic laser pulse width, said method comprising the steps of: generating at least one laser pulse which has a pulse width equal to or less than said characteristic laser pulse width. Mourou et al. does not disclose directing or focusing the laser beam to a point above the surface of the material but does disclose that the optics can include a mask (e.g. see figure 6A). Portney teaches laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece. Alternatively Bennin et al. teaches laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece. It would have been obvious to adapt Mourou et al. in view of Portney et al. or Bennin et al. to focus the laser beam above the workpiece so that an image of a mask can be ablated onto the workpiece. Regarding claim 102, Mourou et al. discloses that the material is a metal, the pulse width is 10 to 10,000 femtoseconds and the pulse has an energy of 1 nanojoule to 1 microjoule (see claim 2 of Mourou et al.). Regarding claim 103, Mourou et al. discloses that the spot size is varied within a range of 1 to 100 microns by changing the f-number of the laser beam. Regarding claim 104, Mourou et al. discloses the spot size is varied within a range of 1 to 100 microns by varying the target position. Regarding claim 105, Mourou et al. discloses that the material is transparent to radiation emitted by the laser and the pulse width is 10 to 10,000 femtoseconds, the pulse has an energy of 10 nanojoules to 1 millijoule. Regarding claim 106, the step of focusing directs the

focus of the laser beam to a point above the surface. Regarding claim 107, Mourou et al. discloses a method for laser induced breakdown (LIB) of a material with a pulsed laser beam, the material being characterized by a relationship of fluence breakdown threshold versus laser pulse width that exhibits a rapid and distinct change in slope at a predetermined laser pulse width that exhibits a rapid and distinct change in slope at a predetermined laser pulse width where the onset of plasma breakdown occurs, said method comprising the steps of: a) generating a beam of one or more laser pulses in which each pulse has a pulse width equal to or less than said predetermined laser pulse width obtained by determining the ablation (LIB) threshold of the material as a function of pulse width and by determining where the ablation threshold function is no longer proportional to the square root of the pulse width. Mourou et al. does not focus the laser beam to a point above the surface of the material so that the ablation threshold of said laser beam is substantially at said surface. Portney teaches laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece. Alternatively Bennin et al. teaches laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece. It would have been obvious to adapt Mourou et al. in view of Portney et al. or Bennin et al. to focus the laser beam above the workpiece so that an image of a mask can be ablated onto the workpiece. Regarding claim 108, Mourou et al. discloses that laser pulse has an energy in the range of 10 nanojoules to 1 millijoule (see claim 8 of Mourou et al). Regarding claim 109, Mourou et al. discloses that the laser pulse has a fluence in a range of 100

millijoules per square centimeter to 100 joules per square centimeter (see claim 9 of Mourou et al). Regarding claim 110, Mourou et al. has a laser pulse that defines a spot in or on the material and the LIB causes ablation of an area having a size smaller than the area of the spot (see claim 9 of Mourou et al). Regarding claim 111, Mourou et al. uses a laser pulse with a wavelength in a range of 200 nm to 2 microns. Regarding claim 112, Mourou et al. discloses a pulse width in a range of a few picoseconds to femtoseconds (see claim 12 of Mourou et al.). Regarding claims 113, 114,117 Mourou et al. discloses that the breakdown includes changes caused by one or more of ionization, free electron multiplication, dielectric breakdown, plasma formation, and vaporization (see claim 13 of Mourou et al). Regarding claim 115, Mourou et al. discloses that the breakdown includes disintegration (see claim 15 of Mourou et al.). Regarding claim 116, see claim 16 of Mourou et al. Regarding claim 118, see claim 18 of Mourou et al. Regarding claim 119, see claim 19 of Mourou et al.. Regarding claim 120, see claim 20 of Mourou et al.. Regarding claim 121, see claim 21 of Mourou et al. Regarding claim 122, see Mourou et al. discloses this in claim 22. Regarding claim 123, Mourou et al. discloses this in claim 23. Regarding claim 124, Mourou et al. meets all of the limitations in paragraph a in paragraph a of claim 24. Mourou et al. does not disclose directing said one or more pulses of said beam to a point above the surface of the material. Portney et al. teach laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece. Alternatively Bennin et al. teaches laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto

the surface of the workpiece. It would have been obvious to adapt Mourou et al. in view of Portney et al. or Bennin et al. to focus the laser beam above the workpiece so that an image of a mask can be ablated onto the workpiece. Regarding claims 125 and 126, see claims 25 and 26 of Mourou et al. Please note that Portney et al. disclose in column 5,lines 13-14 “a mask may be scanned rather than being exposed all at once”. Alternatively Bennin et al. disclose scanning during laser ablation. Regarding claim 133, Mourou et al. discloses all of the limitations of claim 133 in claim 33 of Mourou et al. except focusing or directing the laser beam above the surface of the material. Portney teaches laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece. Alternatively Bennin et al. teaches laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece. It would have been obvious to adapt Mourou et al. in view of Portney et al. or Bennin et al. to focus the laser beam above the workpiece so that an image of a mask can be ablated onto the workpiece. Regarding claim 134, see claim 34 of Mourou et al. Regarding claim 135, Mourou et al. discloses all of the limitations of claim 135 in claim 35 except directing (focusing) the pulse to a point above the surface of the material. Portney teaches laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece. Alternatively Bennin et al. teaches laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece. It would have been obvious to adapt Mourou et al. in

view of Portney et al. or Bennin et al. to focus the laser beam above the workpiece so that an image of a mask can be ablated onto the workpiece. Regarding claim 136, Mourou et al. discloses all of the limitations of claim 136 in claim 36 of Mourou et al. except directing the pulse to a point above the surface of the material. Portney et al. teach laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece. Alternatively Bennin et al. teach laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece. It would have been obvious to adapt Mourou et al. in view of Portney et al. or Bennin et al. to focus the laser beam above the workpiece so that an image of a mask can be ablated onto the workpiece. Regarding claim 137, Mourou et al. discloses all of the limitations of claim 137 in claim 37 of Mourou et al. except directing the pulse to a point above the surface of the material. Portney et al. teach laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece. Alternatively Bennin et al. teach laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece. It would have been obvious to adapt Mourou et al. in view of Portney et al. or Bennin et al. to focus the laser beam above the workpiece so that an image of a mask can be ablated onto the workpiece. Regarding claim 146, Mourou et al. discloses all of the limitations of claim 146 except directing the pulse to appoint above the surface of the material. Portney et al. teach laser ablation while focusing the laser beam above the surface of the workpiece so that an image of

the mask is ablated onto the surface of the workpiece. Alternatively Bennin et al. teach laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece. It would have been obvious to adapt Mourou et al. in view of Portney et al. or Bennin et al. to focus the laser beam above the workpiece so that an image of a mask can be ablated onto the workpiece. Regarding claim 147, Mourou et al. discloses obtaining the beam by chirped pulse amplification (CPA) means comprising means for generating a short optical pulse having a predetermined duration; means for stretching such optical pulse in time; means for amplifying such optical pulse in time; means for amplifying such stretched optical pulse including solid state amplifying media; and means for recompressing such amplified pulse to its original duration. Regarding claim 148, Mourou et al. discloses all of the limitations of claim 148 except directing the laser pulse to a point above the surface of the material. Portney teaches laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece. Alternatively Bennin et al. teaches laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece. It would have been obvious to adapt Mourou et al. in view of Portney et al. or Bennin et al. to focus the laser beam above the workpiece so that an image of a mask can be ablated onto the workpiece. Regarding claim 149, Mourou et al. discloses obtaining the beam by chirped pulse amplification (CPA) means comprising means for generating a short optical pulse having a predetermined duration; means for stretching such optical pulse in time; means for

amplifying such optical pulse in time; means for amplifying such stretched optical pulse including solid state amplifying media; and means for recompressing such amplified pulse to its original duration. Regarding claim 150, Mourou et al. discloses all of the limitations of claim 150 except directing the laser pulse to a point above the surface of the material. Portney teaches laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece. Alternatively Bennin et al. teaches laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece. It would have been obvious to adapt Mourou et al. in view of Portney et al. or Bennin et al. to focus the laser beam above the workpiece so that an image of a mask can be ablated onto the workpiece. Regarding claim 154, Mourou et al. discloses all of the limitations of claim 154 except directing the laser pulse to a point above the surface of the material. Portney teaches laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece. Alternatively Bennin et al. teaches laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece. It would have been obvious to adapt Mourou et al. in view of Portney et al. or Bennin et al. to focus the laser beam above the workpiece so that an image of a mask can be ablated onto the workpiece. Adjusting the intensity of the beam according to the material being ablated is an easily predictable adjustment of the apparatus and well within the level of ordinary skill in the art.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Sakuma in Japan Patent No. 3-66,488 discloses drilling with high accuracy by having the laser beam focused above the workpiece. Ranalli in U.S. Patent No. 5,662,762 discloses laser ablation while using a laser beam focused aboe the workpiece surface. Dupuy in France Patent No. 2,576,836 discloses cutting a groove in thermoplastic while using a laser beam focused above the workpiece surface (see figure 4).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Geoffrey S. Evans whose telephone number is (571)-272-1174. The examiner can normally be reached on Mon-Fri 7:00AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jonathan Johnson can be reached on (571)-272-1177. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Geoffrey S Evans

Geoffrey S Evans
Primary Examiner
Art Unit 1793

GSE